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STEER FEEDING IN THE SUGAR-CANE BELT

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LOCATION OF THE EXPERIMENTS

The work reported in this bulletin is part of a series of livestock experiments in the sugar-cane belt of the United States during four winter seasons from 1915 to 1919. The work was done cooperatively

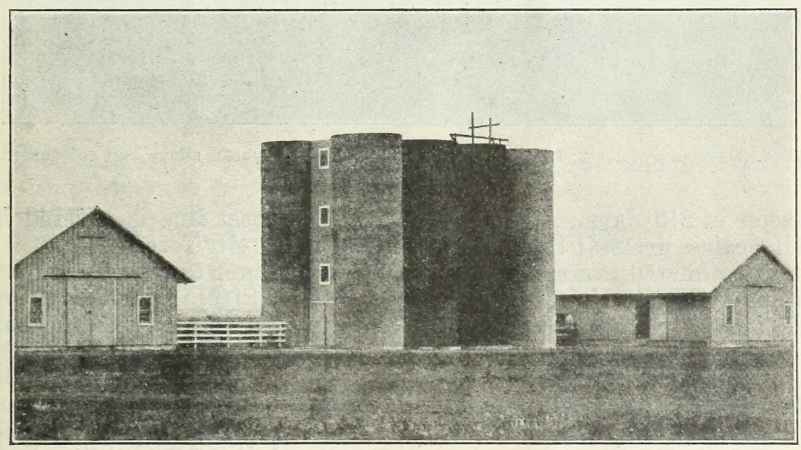

FIG. 1.—Silos and beef-cattle barns on the Iberia stock farm, Jeanerette, La.

by the Bureau of Animal Industry of the United States Department of Agriculture and the Louisiana Agricultural Experiment Station, on a farm of 1,000 acres (fig. 1), known as the Iberia Livestock

Experiment Farm and located near Jeanerette in the central part of southern Louisiana, which is the chief sugar-cane district of the United States. However, the results of the experiments carried on here are applicable to a considerable extent to the whole sugar-cane belt, which extends 100 to 200 miles back from the coast from central South Carolina to eastern Texas.

CHARACTERISTICS OF THE DISTRICT

The central part of southern Louisiana is most readily described as the Delta of the Mississippi River. All this section is less than 100 feet and most of it less than 50 feet above sea level. There are many lakes, rivers, bayous, and large areas of land too swampy for grazing. The predominant type of soil is black alluvial clay, which is the chief difference between this district and other parts of the sugar-cane belt, where light sandy loams predominate. The average annual rainfall is between 50 and 60 inches and the average growing

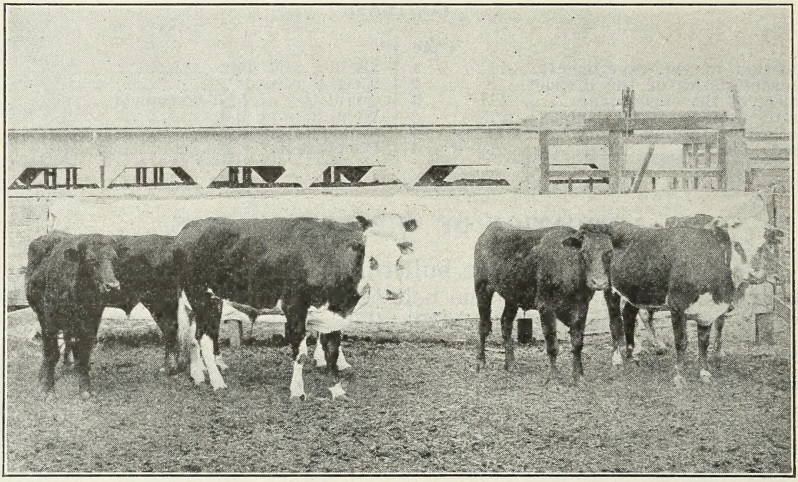

FIG. 2.—Steers of lot 2, 1915–16, fattened on corn-and-soybean silage and cottonseed meal

season is 240 days. The land nearest the coast line is covered by tall prairie grasses; that farther inland is heavily forested.

An estimated average of 3,484,500 tons of sugar cane was produced annually in the United States from 1916 to 1919, inclusive. A ton of tops is removed from approximately every 4 tons of cane harvested. Upon this basis the top crop averaged 871,125 tons annually. This quantity is sufficient, if properly supplemented, to feed more than 360,000 steers 40 pounds a day for 120 days. The sugar-cane planter generally burns these tops in the field after they have dried, so that even their value as humus is lost. A limited quantity, however, is fed while green to the work animals during harvest. A few planters have ensiled the tops successfully. Cane-top silage keeps well, is bright in color, and is relished fairly well by steers.

Much of the better-drained land in this district has been devoted to the production of sugar cane, cotton, and rice so continuously for from 100 to 150 years that it lacks sufficient fertility to produce a

satisfactory crop, and is in poor physical condition on account of the lack of humus. Cane tops, cotton stalks, and rice straw have been burned ordinarily, and the bagasse—sugar cane which has gone through the mills—has not been put back on the land. The cottonseed and rice have been shipped away.

Since the production of legumes is one of the best ways to add nitrogen and humus to the soil, and since much of the fertilizing constituents of crops can be returned to the soil by feeding them to livestock, it seems highly desirable to determine to what extent livestock production can be carried on advantageously in this district.

OBJECT OF THE EXPERIMENTS

The primary object of the experiments reported in this bulletin was to determine the relative efficiency of different silage crops in

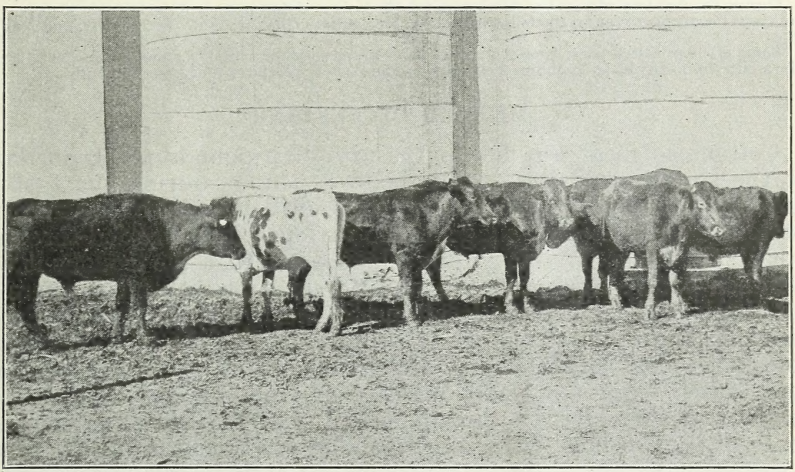

FIG. 3.—Steers of lot 8, 1916–17, at the beginning of the experiment. They were fattened on whole sugar-cane silage and cottonseed meal

combination with cottonseed meal, when fed with and without molasses to steers from 2 to 3 years old.

CATTLE USED IN EXPERIMENTS

Of the 90 head used in the first winter's work, 23 were high-grade Shorthorn and Hereford steers purchased at Fort Worth, Tex., and 67, of which the majority showed at least one cross of a beef breed, were purchased in Mississippi. All the 60 steers used during each of the second and third winters were purchased in Mississippi and were similar in breeding to the Mississippi cattle used the first year. In the fourth winter 56 high-grade Hereford and Shorthorn steers purchased on the Fort Worth market were used. They showed more quality, were of better breeding, and were in better condition than any steers fed in the previous years. Lots, consisting of 15 animals each the first year, 10 each in the second and third, and 8 each in the fourth, were made as nearly uniform as possible in breeding, weight, conformation, quality, and condition. Some of the cattle used in the experiments are shown in Figures 2 and 3.

An outline of the plan of the experiments showing the kind of silage fed to each lot of steers and the number of steers in each lot is presented in Table 1.

TABLE 1.—*Silage feeding plan used in the experiments*[1]

Lot No.	Kind of silage fed	Number of steers in lots				
		1915–16	1916–17	1917–18	1918–19	Total
1	Corn	15	10	10	8	43
2	Corn and soybeans	15	10	10	8	43
3	Sorgo[2]	15	10	10	8	43
4	Sorgo and soybeans			10	8	18
5	Corn and sorgo	15				15
6	Corn, sorgo, soybeans, and cowpeas	15				15
7	Sugar-cane tops	15	10		8	33
8	Sugar cane (whole)		10		8	18
9	Japanese cane		10	10	8	28
10	Corn, sorgo, and soybeans			10		10

[1] During the first two winters the steers were fed 100 days, and during each of the last two 90 days. The work was begun each year on the following dates: Dec. 8, 1915, Dec. 19, 1916, Dec. 15, 1917, and Nov. 26, 1918.

[2] Sorgo is the preferred name for the group of sweet-juiced sorghum varieties grown for sirup and forage. The group is known also as sorghum, saccharine sorghum, sirup sorghum, and sweet sorghum.

METHOD OF FEEDING

Cottonseed meal was fed at the rate of 2 pounds per head daily at the start, increasing gradually to 8 pounds during the first 50 days, and maintained at that quantity until the end of the feeding period. A full feed of silage of the various kinds was fed throughout all the tests. Whenever any silage was left in the troughs it was weighed back. Rock salt and water were kept before the steers at all times. The silage and cottonseed meal were fed twice daily, morning and evening, the silage being placed in the feed bunks and cottonseed meal sprinkled over and mixed with it. During the second and fourth winters a small quantity of molasses was diluted with water and sprinkled on the silage to induce the steers to consume more of it. No hogs were used to follow the steers in the feed lots.

FEEDS USED

Corn silage.—The corn silage was finely cut and uniform in quality, and kept well throughout the four tests. The small proportion of grain in the silage was not determined. However, yields on other plats indicate 4 bushels of grain to a ton of corn silage is a liberal estimate.

Corn and soybean silage.—The corn used in this silage was of practically the same quality as that used for the corn-silage lot. As the soybeans were cut in the blossom stage, they had only a small number of pods on them. The corn and soy beans were not weighed separately for the first two tests, but there probably was about one-third as much soy beans as corn by weight. In the third test 62 per cent of this silage was corn and 38 per cent was soybeans. In the fourth test 66 per cent was corn and 34 per cent soybeans.

Sorgo silage.—The sorgo silage was of good quality, but did not contain much grain owing to the fact that sorgo does not seed well in this locality. The sorgo was cut when it was fully mature and the lower leaves were becoming dry.

Sorgo and soybean silage.—The sorgo and soybeans used were practically the same quality as described above. The silage fed

during the third test was put up in the proportion of sorgo 58 per cent by weight and soybeans 42 per cent; and in the fourth test, sorgo 52 per cent and soybeans 48 per cent.

Corn, sorgo, and soybean silage.—(Corn 16 per cent, sargo 61 per cent, and soybeans 23 per cent.) This silage was poor in quality. The crops had been planted late and were not fully mature when harvested.

Cane-top silage.—The cane tops used in this experiment were not of the best quality. The supply of cane tops was so far from the silo that they usually arrived dried out, which made them very tough and hard to cut. Although water was added to restore the moisture, the silage was very poor in quality.

Whole sugar-cane silage.—The entire stalk and top of mature, native sugar cane ready for sugar making was used for silage. Some of the leaves of flags were so dry that the cutter did not cut them.

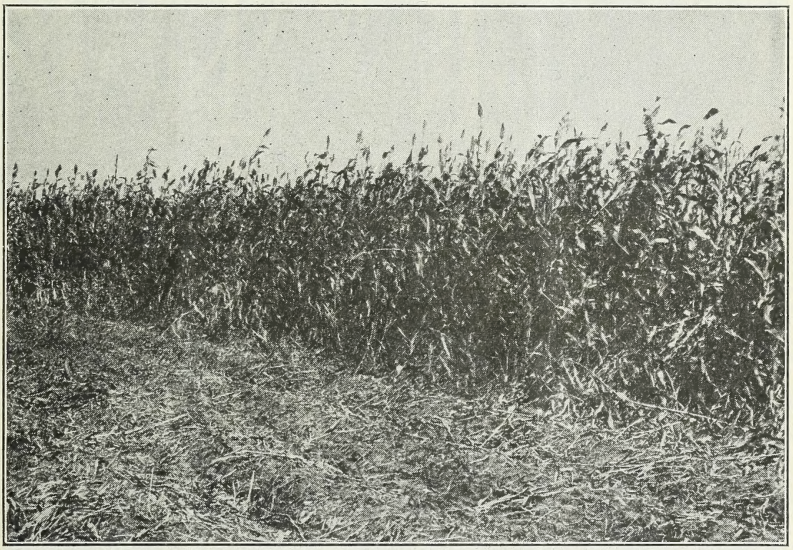

FIG. 4.—Texas seeded ribbon cane, planted May 9, 1917, harvested September 11. Yield, 17.1 tons of silage per acre

Japanese-cane silage.—It was almost impossible to cut all the Japanese cane into sufficiently small pieces, but although the pieces of silage were very hard, there was no evidence of sore mouths. The cane was ensiled after it had matured, when it would ordinarily be used for sugar making.

Corn and sorgo silage.—The quality was the same as that used for the corn-silage lot and the sorgo-silage lot. Since separate weights were not kept, it was estimated to consist of approximately 20 per cent corn and 80 per cent sorgo.

Corn, sorgo, soybean, and cowpea silage.—As these were grown together separate weights could not be taken.

Cottonseed meal.—The cottonseed meal used was finely ground and of a good color.

Rock salt.—Common rock salt was of good quality.

Molasses.—Blackstrap molasses was of good quality.

FIG. 5.—Sugar cane which yielded 11.7 tons of silage per acre

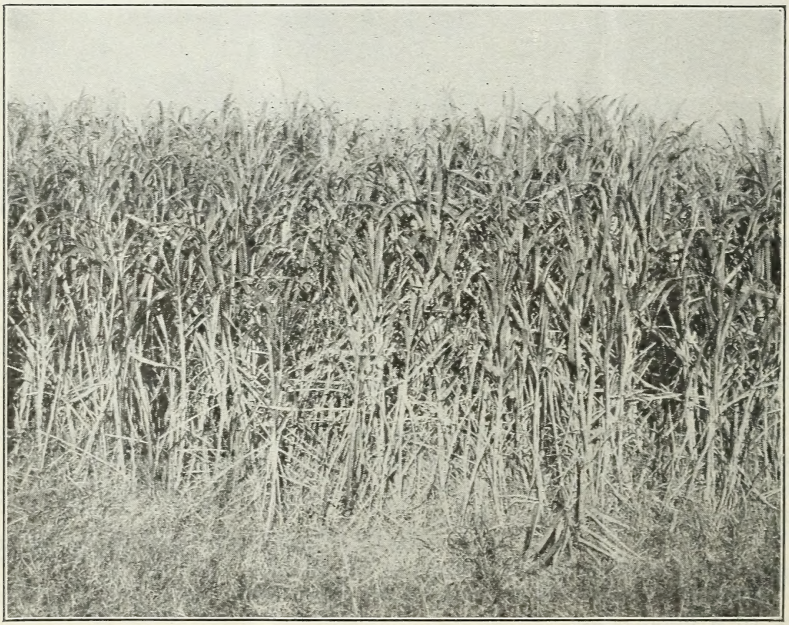

FIG. 6.—Japanese cane, yielding 39.3 tons of silage per acre

Some of the crops grown for silage are shown in Figures 4, 5, and 6. The composition of the various feeds as determined by analysis is shown in Table 2.

TABLE 2.—*Analyses of feeds used in the experiments*

Lot No.	Feed	Season	Water	Ash	Crude protein	Carbohydrates		Fat
						Crude fiber	Nitrogen-free extract	
			Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
1	Corn silage	1915–16	74.5	3.4	1.5	7.2	13.0	0.4
		1916–17	65.1	2.1	2.1	9.5	20.1	1.1
		1917–18	64.9	2.7	2.7	7.4	21.3	1.0
		1918–19	72.6	2.0	1.7	7.3	15.8	0.6
	Average		69.3	2.5	2.0	7.8	17.6	0.8
2	Corn and soybean silage	1915–16	71.9	2.3	2.3	8.2	14.7	0.6
		1916–17	70.4	3.1	3.6	7.5	14.4	1.0
		1917–18	65.1	4.3	4.0	9.1	16.6	0.9
		1918–19	68.7	3.3	2.8	9.3	15.2	0.7
	Average		69.1	3.2	3.2	8.5	15.2	0.8
3	Sorgo silage	1915–16	61.5	3.6	2.0	11.4	20.7	0.8
		1916–17	81.2	1.4	1.0	6.2	9.7	0.5
		1917–18	73.1	2.2	1.1	8.6	14.4	0.6
		1918–19	70.4	2.1	1.3	8.9	16.6	0.7
	Average		71.6	2.3	1.3	8.8	15.4	0.6
4	Sorgo and soybean silage	1917–18	70.6	2.8	2.1	9.6	14.2	0.7
		1918–19	72.2	2.6	2.7	7.6	13.9	1.0
	Average		71.4	2.7	2.4	8.6	14.1	0.8
5	Corn and sorgo silage	1915–16	69.0	2.6	1.8	8.3	17.6	0.7
6	Corn, sorgo, soybean, and cowpea silage	1915–16	71.7	2.3	1.9	8.9	14.4	0.8
7	Cane-top silage	1916–17	64.6	3.2	1.8	13.4	16.0	1.0
		1918–19	69.9	3.3	1.5	10.4	14.4	0.5
	Average		67.3	3.3	1.6	11.9	15.2	0.7
8	Whole sugar-cane silage	1916–17	74.7	1.7	0.8	8.5	13.8	0.5
		1918–19	73.8	1.9	1.4	8.0	14.4	0.5
	Average		74.3	1.8	1.1	8.2	14.1	0.5
9	Japanese-cane silage	1916–17	77.2	1.7	0.7	8.2	11.8	0.4
		1917–18	70.4	2.1	1.3	11.3	14.3	0.6
		1918–19	73.9	1.6	0.7	9.4	13.8	0.6
	Average		73.9	1.8	0.9	9.6	13.3	0.5
10	Corn, sorgo, and soybean silage	1917–18	63.5	3.0	2.6	10.2	19.9	0.8
All lots.	Cottonseed meal	1915–16	9.0	5.1	39.3	11.9	27.9	6.8
		1916–17	5.0	6.9	41.0	12.4	26.1	8.6
		1917–18	8.8	5.6	35.6	14.0	30.1	5.9
		1918–19	8.3	6.0	37.3	13.0	29.5	5.9
	Average		7.8	5.9	38.3	12.8	28.4	6.8

SHELTER AND LOTS

The steers were fed in lots measuring 24 by 54 feet. These feed lots were on both sides of an open shed with a central alley. The feed bunks were sheltered, as they were on each side of this alley. The shed was kept dry by the use of rice straw and bagasse for bedding. During the first two tests the lots outside of the sheds were very muddy during the rainy weather. All lots, however, were floored with 2-inch "pecky" cypress boards before the third test. During the third and fourth tests the lots became sloppy, but the boards prevented the steers from sinking into the mud.

WEIGHT RECORDS

Individual weights were taken of all steers for three consecutive days at the beginning and at the end of each experiment. The averages of these weights were used for the initial and final weights, respectively. The first experimental feed was the afternoon feed of the second weigh day. All weights were taken between 9 and 11 a. m., after the steers had cleaned up their morning feed. Lot weights were taken every 30 days throughout the experiment for use in computing 30-day records. The last experimental feed was on the morning of the second of the last three weigh days.

QUANTITIES OF FEED CONSUMED

The steers were fed as much silage as they would clean up. The cottonseed meal and molasses were limited, the same quantities being fed to each lot with the exception of the cane-top silage lot in 1915–16 and 1916–17. The quantities of feed consumed in the fourth experiment were greater than in any other experiment.

However, the initial weights of these steers as well as the gains in live weight were also greater. Although the rate of silage consumption was not uniform throughout the four tests, the differences were not great.

The feed consumed is shown in Table 3 and the relation of feed with and without molasses to gain in weight is shown in Table 4.

TABLE 3.—*Total and average daily feed consumed per steer when fed with and without molasses*

Lot No.	Feed	Total feed consumed per steer					
		Without molasses			With molasses		
		1915–16	1917–18	Average	1916–17	1918–19	Average
		Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1	Corn silage	4,045	4,136	4,082	3,403	5,258	4,227
	Cottonseed meal	500	420	468	512	527	519
	Molasses				16	27	21
2	Corn and soybean silage	3,730	4,254	3,940	4,289	5,144	4,669
	Cottonseed meal	500	420	468	512	527	519
	Molasses	[1] 3			16	27	21
3	Sorgo silage	4,050	4,224	4,119	4,146	4,725	4,403
	Cottonseed meal	500	420	468	512	527	519
	Molasses				16	27	21

[1] This small quantity of molasses was fed during a period of 20 days in an unsuccessful attempt to get the steers to eat more of the silage.

TABLE 3.—*Total and average daily feed consumed per steer, etc.*—Continued

Lot No.	Feed	Total feed consumed per steer					
		Without molasses			With molasses		
		1915–16	1917–18	Average	1916–17	1918–19	Average
		Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
4	Sorgo and soybean silage		4,257	4,257		5,256	5,256
	Cottonseed meal		420	420		527	527
	Molasses					27	27
5	Corn and sorgo silage	4,028		4,028			
	Cottonseed meal	500		500			
	Molasses						
6	Corn, sorgo, soybean, and cowpea silage	4,045		4,045			
	Cottonseed meal	500		500			
7	Cane-top silage	3,774		3,774	2,706	5,134	3,785
	Cottonseed meal	500		500	512	527	519
	Molasses	[2] 63		[2] 63	112	27	74
8	Sugar-cane silage				3,366	4,723	3,969
	Cottonseed meal				512	527	519
	Molasses				16	27	21
9	Japanese-cane silage		4,157	4,157	3,093	4,195	3,583
	Cottonseed meal		420	420	512	527	519
	Molasses				16	27	21
10	Corn, sorgo, and soybean silage		4,244	4,244			
	Cottonseed meal		420	420			
	Molasses						

Lot No.	Feed	Daily feed consumed per steer					
		Without molasses			With molasses		
		1915–16	1917–18	Average	1916–17	1918–19	Average
		Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1	Corn silage	40.4	45.9	42.5	34.0	58.4	44.2
	Cottonseed meal	5.0	4.7	4.9	5.1	5.9	5.4
	Molasses				.2	.3	.2
2	Corn and soybean silage	37.3	47.3	41.0	42.9	57.1	48.9
	Cottonseed meal	5.0	4.7	4.9	5.1	5.9	5.4
	Molasses				.2	.3	.2
3	Sorgo silage	40.5	46.9	42.9	41.5	52.5	46.1
	Cottonseed meal	5.0	4.7	4.9	5.1	5.9	5.4
	Molasses				.2	.3	.2
4	Sorgo and soybean silage		47.3	47.3		58.4	58.4
	Cottonseed meal		4.7	4.7		5.9	5.9
	Molasses					.3	.3
5	Corn and sorgo silage	40.3		40.3			
	Cottonseed meal	5.0		5.0			
	Molasses						
6	Corn, sorgo, soybean, and cowpea silage	40.4		40.4			
	Cottonseed meal	5.0		5.0			
7	Cane-top silage	37.7		37.7	27.1	57.0	39.6
	Cottonseed meal	5.0		5.0	5.1	5.9	5.4
	Molasses	.6		.6	1.1	.3	.8
8	Sugar-cane silage				33.7	52.5	41.5
	Cottonseed meal				5.1	5.9	5.4
	Molasses				.2	.3	.2
9	Japanese-cane silage		46.2	46.2	30.9	46.6	37.5
	Cottonseed meal		4.7	4.7	5.1	5.9	5.4
	Molasses				.2	.3	.2
10	Corn, sorgo, and soybean silage		47.2	47.2			
	Cottonseed meal		4.7	4.7			
	Molasses						

[2] As the cane-top silage was of inferior quality and very unpalatable, molasses was added to increase its palatability so that the steers would eat a larger quantity.

TABLE 4.—*Pounds of feed required to make 100 pounds of gain in live weight when steers were fed with and without molasses*

Lot No.	Feed	1915–16	1917–18	Average without molasses	1916–17	1918–19	Average with molasses
		Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1	Corn silage	2,313	1,674	2,003	1,715	2,460	2,060
	Cottonseed meal	286	170	230	258	247	253
	Molasses				8	13	10
2	Corn and soybean silage	1,781	2,004	1,871	1,990	2,115	2,049
	Cottonseed meal	239	198	222	238	217	228
	Molasses				8	11	9
3	Sorgo silage	1,954	2,271	2,073	2,180	2,851	2,456
	Cottonseed meal	241	226	235	269	318	289
	Molasses				9	16	12
4	Sorgo and soybean silage		2,435	2,435		2,198	2,198
	Cottonseed meal		240	240		220	220
	Molasses					11	11
5	Corn and sorgo silage	1,930		1,930			
	Cottonseed meal	240		240			
6	Corn, sorgo, soybean, and cowpea silage	2,066		2,066			
	Cottonseed meal	255		255			
7	Cane-top silage	2,527		2,527	1,982	4,738	3,052
	Cottonseed meal	335		335	375	486	418
	Molasses	42		42	82	25	60
8	Sugar-cane silage				2,238	3,115	2,629
	Cottonseed meal				341	348	344
	Molasses				11	18	14
9	Japanese-cane silage		2,832	2,832	1,890	3,888	2,580
	Cottonseed meal		286	286	313	489	374
	Molasses				10	25	15
10	Corn, sorgo, and soybean silage		2,794	2,794			
	Cottonseed meal		276	276			

WEIGHTS AND GAINS

The average weights of the steers at the beginning of each experiment were very uniform. In rapidity of gains the relative position of the lots varied somewhat in the four winters. The lots fed corn and soybean silage (lot 2) made the greatest gains in weight in three of the four experiments. The sorgo-silage lot (lot 3) made very creditable gains. In 1917–18, the lot fed sorgo and soybean silage (lot 4) made slightly smaller gains than lot 3, but in 1918–19 the gains were much larger and the case was reversed. The comparatively small gains in live weight for lots 7, 8, and 9, fed cane-top silage, sugar-cane silage, and Japanese-cane silage, respectively, were probably due in a large measure to the low digestibility of these silages. The lots making the greatest gains were in sufficiently high condition to command the top price on the Fort Worth market when sold. The weights and gains are summarized in Table 5.

TABLE 5.—*Weights and gains of steers*

Lot No.	Silage fed	Season	Initial weight per steer	Final weight per steer	Total gain	Daily gain
			Pounds	*Pounds*	*Pounds*	*Pounds*
1	Corn silage	1915–16	765	940	175	1.75
		1916–17	754	952	198	1.98
		1917–18	738	985	247	2.74
		1918–19	860	1,074	214	2.38
	Average		774	978	204	2.13
2	Corn and soybean silage	1915–16	762	971	209	2.09
		1916–17	743	959	216	2.16
		1917–18	747	959	212	2.36
		1918–19	864	1,107	243	2.70
	Average		773	991	218	2.28
3	Sorgo silage	1915–16	774	981	207	2.07
		1916–17	749	939	190	1.90
		1917–18	761	947	186	2.07
		1918–19	867	1,033	166	1.84
	Average		783	974	191	1.99
4	Sorgo and soybean silage	1917–18	743	918	175	1.94
		1918–19	871	1,110	239	2.66
	Average		800	1,003	203	2.26
5	Corn and sorgo silage	1915–16	769	978	209	2.09
6	Corn, sorgo, soybean, and cowpea silage	1915–16	762	958	196	1.96
7	Cane-top silage	1915–16	775	924	149	1.49
		1916–17	750	887	137	1.37
		1918–19	872	980	108	1.20
	Average		791	927	136	1.39
8	Sugar-cane silage	1916–17	750	900	150	1.50
		1918–19	856	1,007	152	1.68
	Average		797	948	151	1.58
9	Japanese-cane silage	1916–17	746	910	164	1.64
		1917–18	758	905	147	1.63
		1918–19	857	965	108	1.20
	Average		782	924	142	1.52
10	Corn, sorgo, and soybean silage	1917–18	737	889	152	1.69

FINANCIAL RESULTS

Table 5 gives the production in terms of feed consumed per 100 pounds of gain, and Table 7 gives the cost in dollars and cents when these feeds are valued according to Table 6. The prices given for the cottonseed meal and molasses were the actual cost of the feed at the farm. The various kinds of silage were given the same valuation, since there was no satisfactory means of establishing market prices for such home-grown feeds. The valuation used was based on the estimated value of the corn grain in a ton of the corn silage plus $1 a ton for the forage and cost of harvesting. However, some of the silage fed the other lots cost much less than the corn silage fed to lot 1. Wherever the prices of feeds are different from the prices used in these calculations it is suggested that they be used with the total quantities of the different feeds consumed per steer, as given in Table 3, as a basis for determining the most economical ration. No account is taken of costs other than feed,

such as labor, equipment, interest, and insurance. In a survey made in Illinois, from 1918 to 1922, it was found that feed constituted 70 to 81 per cent of the cost of fattening steers. Generally it is estimated that the value of the manure offsets the costs other than feed.

TABLE 6.—*Prices of feeds used*

Season	Silage	Cotton-seed meal	Molasses	Season	Silage	Cotton-seed meal	Molasses
	Ton	*Ton*	*Gallon*		*Ton*	*Ton*	*Gallon*
1915–16	$4.00	$33.83	$0.06	1917–18	$6.00	$50.28	None.
1916–17	4.00	32.20	.27	1918–19	6.00	61.65	$0.14

TABLE 7.—*Cost of feed per 100 pounds gain, selling prices, and profit or loss per steer*

Lot No.	Silage fed	Years	Cost per 100 pounds gain	Necessary selling price to break even (per hundredweight)[1]	Actual selling price (per hundredweight)	Profit or loss per steer
1	Corn silage	1915–16	$9.46	$6.99	[2]	[2]
		1916–17	7.70	6.56	$9.17	$24.86
		1917–18	9.30	8.29	10.69	23.67
		1918–19	15.13	11.96	11.73	[3] −2.45
	Average		10.40	8.83	10.49	12.25
2	Corn and soybean silage	1915–16	7.60	6.67	[2]	[2]
		1916–17	7.92	6.63	9.17	24.34
		1917–18	10.99	8.62	10.40	17.06
		1918–19	13.15	11.61	11.78	1.93
	Average		10.60	8.88	10.41	15.34
3	Sorgo silage	1915–16	7.99	6.75	[2]	[2]
		1916–17	8.82	6.78	8.92	20.10
		1917–18	12.49	8.84	10.13	12.21
		1918–19	18.54	12.35	11.16	[3] −12.33
	Average		12.70	9.19	10.02	8.02
4	Sorgo and soybean silage	1917–18	13.35	8.98	9.99	9.30
		1918–19	13.52	11.68	12.28	6.70
	Average		13.44	10.30	11.12	8.14
5	Corn and sorgo silage	1915–16	7.91	6.74	[2]	[2]
6	Corn, sorgo, soybean, and cowpea silage	1915–16	8.45	6.84	[2]	[2]
7	Cane-top silage	1915–16	10.93	7.15	[2]	[2]
		1916–17	11.95	7.14	8.42	11.38
		1918–19	29.49	13.19	11.06	[3] −20.93
	Average		18.77	9.98	9.66	[3] −2.93
8	Sugar-cane silage	1916–17	10.12	6.90	8.54	14.72
		1918–19	20.27	12.54	11.36	[3] −11.38
	Average		14.67	9.57	9.87	2.90
9	Japanese-cane silage	1916–17	8.96	6.75	8.54	16.32
		1917–18	15.69	9.20	9.82	5.57
		1918–19	27.02	12.94	10.78	[3] −20.85
	Average		15.38	9.45	9.66	1.86
10	Corn, sorgo, and soybean silage	1917–18	15.33	9.21	10.04	7.37

[1] The initial cost of the steers per 100 pounds in the feed lot was as follows: 1915–16, $6.42; 1916–17, $6.26; 1917–18, $7.95; 1918–19, $11.17.

[2] The calculations for actual selling price and profit or loss per steer have not been made for the 1915–16 test because the cattle were not sold until 20 days after the experiment was closed. Therefore, the data given for 1915–16 are not included in the averages.

[3] Minus sign (−) indicates a loss.

With the exception of the first experiment in 1915-16, salesmen from commission firms located at the New Orleans and Fort Worth stockyards placed market values per 100 pounds on the cattle at the termination of the experiments. The actual selling price, as given in Table 7, was obtained by subtracting the marketing charges, including shrinkage, from these market prices. As the cattle in the first season's experiment were not marketed until 20 days after the first experiment was terminated, the financial calculations for those lots could not be carried out.

Five of the seven lots fed in 1918-19 showed a financial loss, as the experiment made that winter was under conditions unfavorable to profitable production. Feeders were very high in price and so were the feeds used as supplements. The greater cost of producing gains in lots 7, 8, and 9, fed on cane tops, sugar cane, and Japanese cane, respectively, and the lower selling price of these lots caused much heavier financial losses than in the other lots.

Lots 5, 6, and 10 have not been used in making comparisons and drawing conclusions, as these lots were fed only one year.

CONCLUSIONS

The results of the experiments are believed to warrant the following conclusions:

Cattle feeding can be made an important enterprise in the sugar-cane belt.

Sorgo silage compares favorably with corn silage as a beef-cattle feed.

The addition of soybeans to either corn or sorghum increases the value of the silage.

Silage made from sugar cane can be utilized advantageously as a feed for cattle, although it is not so palatable as that made from corn, soybeans, sorgo, or cowpeas.

There is little difference in feeding value between cane-top and Japanese-cane silage.

In making 100 pounds gain, steers fed cane-top silage required 28 per cent more silage and 40 per cent more cottonseed meal than those fed corn silage.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

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